

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**  
**(MID SEMESTER EXAMINATION MO/2024)**

**CLASS: BARCH**  
**BRANCH: ARCHITECTURE**

**SEMESTER : V/ADD**  
**SESSION : MO/2024**

**SUBJECT: AR302 BUILDING SERVICES-III (MECH. & FIRE SAFETY)**

**TIME: 02 Hours**

**FULL MARKS: 25**

**INSTRUCTIONS:**

1. The question paper contains 5 questions, each of 5 marks and a total of 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

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Q.1(a)	Draw neat sketches to illustrate the impact of mechanical ventilation on the design of modern public buildings.	[2]	1	1,3
Q.1(b)	Discuss the impact of increasing mechanical ventilation demand on the ambient air temperature of a high-density urban area during nighttime.	[3]	2	1,2
Q.2(a)	Explain the Refrigeration Cycle with the help of neat sketches. Also, discuss its role in heat transfer from one space to another.	[5]	2	4
Q.3(a)	Draw a neat sketch of winter air conditioning and depict its various psychrometric processes schematically.	[5]	5	2,4
Q.4(a)	If there are 500 people working in a hall of a factory having a volume of 1000 cubic meters, what will be the ventilation intensity to achieve a desirable minimum rate of fresh air flow of 25 cubic meters per person per hour?	[5]	5	3
Q.5(a)	Explain the role of AHU in a centralized air conditioning system.	[2]	2	5
Q.5(b)	Differentiate between CLTD and CLF Methods in the context of their application for cooling load calculation.	[3]	2	4

:23/09/2024:M